U.S. ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL MONITORING AND
SUPPORT LABORATORY
P.O. BOX 15027
LAS VEGAS, NEVADA 89114
702/736-2969

JAN 19 1977

Mr. W. Gray
Environmental Engineering
New Mexico Operations
The Anaconda Company
P. O. Box 638
Grants, NM 86020

Dear Mr. Gray:

A summary of the radon exhalation measurements we made in June 1976, using the radon accumulation technique described by Bernhardt et al. in ORP/LV-75-7(A), is attached.. Data from soil samples obtained from the various sites, along with a map indicating the locations, are also attached.

All of the values are similar to estimates of average background, which is about 0.05 fCi/cm^2-sec. The radium-226 results for the soil samples are also similar to expected background values.

We do not have enough data to denote the specific natural background for the study area. But, we note the values for the Laguna Training Building and Paguate, 0.02 to 0.03 fCi/cm^2-sec, are similar to values we have measured in Las Vegas. It would appear the values for the railway trestle and the Old Laguna Ball Field are somewhat above background.

The values for the Jackpile dumps are in the range of expected background. We do not have sufficient information to determine if these values are above the actual ambient background for this area.

Our evaluations of the radon exhalation measurement technique indicate a general 95-percent confidence level error of around 30 percent. Thus, although the subject data are similar, we believe there are significant differences between the values for several of the sites (e.g., not just measurement variation). The radium and moisture content data (surface 6 to 12 inches) do not appear to explain these differences. The differences may be due to changes in atmospheric pressure (not measured in this case) or the underlying unsampled geological formations. Also, it should be recognized that the

measurements are based on the radon released from an area of less than three square feet. Thus, in a heterogeneous area, adjoining measurements could vary by a factor of two or more.

These results are based on the measurement technique described by Bernhardt, Johns, and Kaufmann in ORP/LV-75-7(A). The actual radon analyses were performed by Eberline Instrument Corporation, under contract to us. Should you have any questions, I suggest you call Mr. Dave Bernhardt (702 - 736-2969, ex. 291) of this office. Should you obtain additional results we would appreciate receiving them.

Sincerely yours,

Don

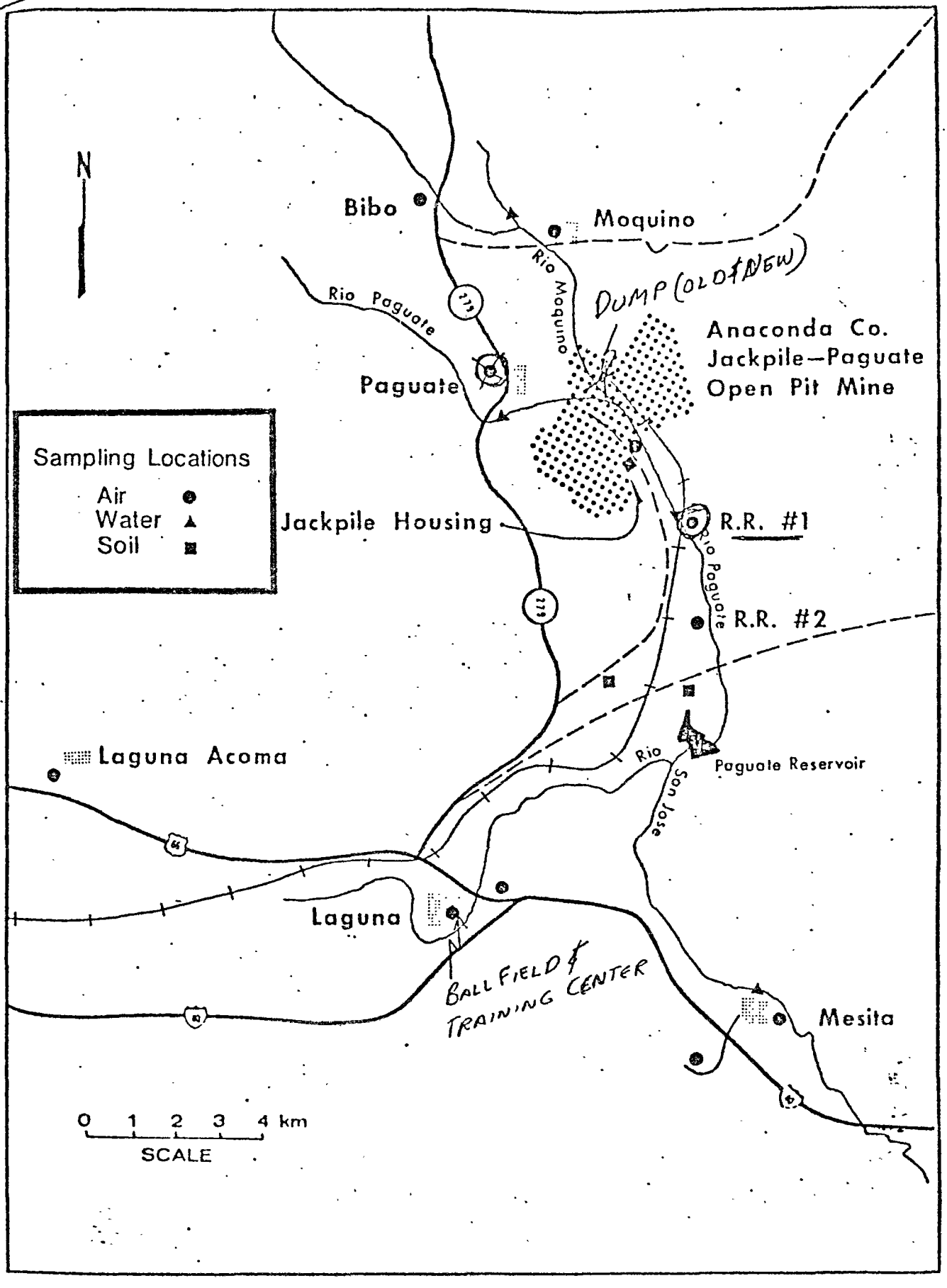
Donald W. Hendricks
Director, Office of Radiation
Programs, Las Vegas Facility

2 Attachments

cc:
Mr. Jerry Thornhill, Region VI
Mr. Donald Beard, IHS
Mr. Theodore Wolff, NMEIA
Mr. Floyd Galpin, EPA
Dr. William Mills, EPA
Mr. Jack Reynolds, Anaconda

Location	Radon Exhalation fCi/cm^2-sec	Radium-226 (pCi/g) 0 - 6 in Depth	6 - 12 in Depth	Percent Moisture 0 - 6 In.	6 - 12 In.
Railroad Trestle	0.09	1.3 ± 0.1[a]	0.97 ± 0.11[a]	0.6	1.1
Old Laguna					
Ball Field	0.07	0.83 ± 0.14	0.93 ± 0.15	2.8	4.8
Jackpile Dump					
Old	0.04	1.5 ± 0.2	-	5	-
New	0.06	0.99 ± 0.14	-	2.7	-
Laguna Training					
Center	0.02	0.90 ± 0.13	0.36 ± 0.09	1.7	1.3
Paguate	0.03	1.7 ± 0.2	0.99 ± 0.11	4.5	2.7

[a] Two-sigma counting error.


N
Bibo
Moquino
Rio Moquino
DUMP (OLD & NEW)
Rio Paguate
Paguate
Anaconda Co.
Jackpile–Paguate
Open Pit Mine
Sampling Locations
Air
Water
Soil
Jackpile Housing
R.R. #1
Rio Paguate
R.R. #2
Laguna Acoma
Rio San Jose
Paguate Reservoir
Laguna
BALL FIELD & TRAINING CENTER
Mesita
0 1 2 3 4 km
SCALE